

COUNTRY USSR (Armenian SSR)

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SUBJECT Construction of Sevan
Underground Hydroelectric Installation

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1. Location: The Sevan ($40^{\circ} 32' N$, $44^{\circ} 56' E$) underground hydroelectric installation, generally called Sevan Stroi, is located two to three kilometers from Sevan, about 60 kilometers from Yerevan ($40^{\circ} 11' N$, $44^{\circ} 30' E$) and 30 kilometers from Kirovakan ($40^{\circ} 48' N$, $44^{\circ} 30' E$).
2. Construction of installation: The construction of this installation was started in 1926. When PW's arrived in February 1946, the shafts were finished, but the underground water tunnel through the mountain had not been started. By June 1949 the tunnel was finished; the underground turbine room and open transformer were ready for operation. High tension lines extending in two directions could be described as finished. Just prior to June 1949, the entire installation was subjected to several operational tests, which revealed no fundamental weaknesses.
3. The construction project consisted of dynamiting rock and clearing it away. The technical equipment used for this operation was extremely primitive. In all, five shafts were used to bring rock to the surface. The rocks were loaded by hand into trucks, pushed to a shaft, and raised on hoist platforms there. From the surface, trucks and sometimes narrow gauge field railroads transported the rock to the dumping site. In Shaft-0 the hoisting device did not bring the rock to the surface but to a platform below the surface from which it was taken by truck through a tunnel 200 meters long and dumped. The shafts are about 1,500 meters apart. Shaft-0 is about 120 meters deep, Shaft 1 70-80 meters deep because a soil bed was selected for its site, and Shaft 2 about 150 meters deep. The other two shafts vary in depth between 70 and 150 meters.

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4. Installations (See attached sketch map for location of various installations): The flow of water into the underground turbine room is controlled by two locks of Finnish construction, 5-6 meters wide, set in concrete foundations. An American mixer was available for the construction of these locks. For the first 300 meters the water tunnel is an open canal the walls of which are about 30-40 meters high. The pressure pipe line begins at the end of the canal and extends to the turbine room. This pipe line, 4-5 meters in diameter and set in concrete, is laid on a 70 meter incline so steep that it can be climbed only by the clamps fastened to the pipe line. The underground tunnel leaves the turbine and runs via Shafts 1-4 into the open canal or controlled stream bed about seven kilometers from the lock and continues toward the southwest reportedly into the Yerevan area. Only part of the tunnel is concrete after it leaves the turbine room.
5. The turbine room, 120 meters underground, is 60 meters long, 40 meters wide and 24 meters high, fashioned completely out of rock. Shaft-0, extending from the turbine room to the surface, is equipped with a heavy hoist of Finnish origin (iron girder construction) capable of lifting 40 tons. The turbine room can also be reached by elevator. Two turbines are now installed, but sufficient room is available for a third. A concrete opening 15 meters deep and eight meters square was constructed to lessen the pressure of the water as it leaves the turbines and flows into the outlet tunnel.
6. The open transformer, 300-400 meters south of Shaft-0, is connected to the turbine room by a buried cable line. The 100-meter square installation was built on the hilly terrain only after 10,000 cubic meters of earth had been removed. A building, with two and a half stories completed by June 1949, is under construction in the immediate vicinity of the open transformer and is reportedly a part of the transformer. The high tension lines extending toward Yerevan and Kirovakan are trellis type masts of German origin.
7. The main lake outlet, an open canal 200 meters south of the underground tunnel, is controlled by one lock and appears to be an artificially controlled stream bed 10-12 meters wide and 2-3 meters deep. Fresh earth can be seen on the sloping banks of the canal indicating that this is a new installation or that work was done recently to regulate the canal.
8. Below the open canal is an old power installation of limited capacity, which supplied the construction site with power. In the winter when the lake was frozen, this unit ceased to operate and the construction site was in darkness. Diesel units provided power for the compressors of drill hammers and other equipment of the building unit.
9. The hydroelectric installation has no spur connection with the railroad. The nearest railroad stations are in Yerevan and Kirovakan. Materials are brought from Yerevan to Sevan on an asphalt and gravel road.
10. Production: In the summer of 1949 two turbines of American origin were installed and ready for operation, each with a reported capacity of 12,000 kilowatts. A third turbine was expected in autumn 1949 or early 1950.

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11. Management: The construction of the hydroelectric plant was managed by a top-flight Jewish engineer. It is unlikely that he will direct the power installation when full scale operation starts. Commissions appeared approximately every four months to inspect the construction and the PW camp. Members wore uniforms and blue caps.
12. Personnel: Construction personnel averaged 900 workers. No civilians were employed with the exception of a few Russian foremen. Work was done in three shifts, 300 men per shift and about 70 men assigned to each shaft.
13. Security measures: After the turbines were installed, a military guard was furnished.

Encl:

1 sketch map of Sevan underground hydroelectric installation

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